

ABSTRACT

An object of the present invention is to provide a proton conducting polymer membrane that has excellent mechanical properties and high methanol barrier properties, in addition to high proton conductivity, and is useful as an electrolyte in polymer electrolyte fuel cells and direct methanol fuel cells. The present invention provides a proton conducting polymer membrane having a product of a proton conductivity at 23°C and a methanol barrier coefficient at 25°C in an aqueous methanol solution of a specified concentration being a specified value or more. The present invention also provides a proton conducting polymer membrane having an ion exchange capacity of 0.3 milli-equivalent/g or more, and having a crystalline phase.